

## ABSTRACT OF THE DISCLOSURE

To encode a multi-channel digital data with adjustment of the number of bits allocated to each channel for entropy coding of the multi-channel data, there is provided a multi-channel encoder (1) including the number  $\underline{n}$  of encoders ( $10_n$ ) for audio data from the number  $\underline{n}$  of channels, and an inter-channel bit allocator (30) that allocates the number of bits ( $B_n$ ) usable for each channel on the basis of the provisional number of in-use bits ( $b_n$ ) from each of the encoders ( $10_n$ ). Each of the encoders ( $10_n$ ) makes entropy coding on the basis of the provisional number of quantizing steps, outputs the provisional number ( $b_n$ ) of in-use bits resulted from summing of a code length of each of units of coding, and adjusts the number of in-use bits by updating the quantizing steps correspondingly to the number of bits ( $B_n$ ) supplied based on the provisional number of in-use bits ( $b_n$ ). Also, the inter-channel bit allocator (30) allocates the total number of usable bits ( $S$ ) as the number of bits ( $B_n$ ) determined correspondingly to a ratio of each provisional number of in-use bits ( $b_n$ ) with the sum of all the proportional numbers of in-use bits ( $b_n$ ).